

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

1-52. (CANCELED)

53. (NEW) An isolated or purified nucleic acid, wherein the nucleic acid comprises:

(A) retroviral nucleic sequences consisting of:

- (1)  $\psi$  packaging sequences;
- (2) cis-acting nucleic acid sequences for reverse transcription;
- (3) cis-acting nucleic acid sequences for virus integration;
- (4) at least one cPPT sequence and at least one CTS sequence,

wherein any other sequence of *pol*, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent; and

- (5) optionally a cis-acting sequence RRE;

and

(B) at least one heterologous nucleic acid sequence of interest,

wherein the nucleic acid induces import of the heterologous nucleic acid sequence of interest into a cell nucleus.

54. (NEW) A vector comprising the nucleic acid as claimed in claim 53.

55. (NEW) The vector of claim 54, which is an expression vector, a shuttle vector, an integration vector, a transposon, or a retrotransposon.

56. (NEW) The vector of claim 54, which is pTRIP ΔU3 EF1αGFP.

57. (NEW) A recombinant cell comprising the vector of claim 56.

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58. (NEW) A recombinant cell comprising the vector of claim 54.
59. (NEW) A virus comprising the nucleic acid of claim 53.
60. (NEW) The virus of claim 59, which is a retrovirus.
61. (NEW) The retrovirus of claim 60, which is a lentivirus.
62. (NEW) A recombinant cell comprising the nucleic acid as claimed in claim 53.
63. (NEW) The recombinant cell of claim 62, wherein the cell is a HeLa cell or a hematopoietic stem cell.
64. (NEW) The recombinant cell of claim 62, wherein the cell is a hematopoietic stem cell.
- 65 (NEW) A process for inserting a heterologous nucleic acid sequence of interest into a nucleus of a target cell, *in vitro*, wherein the process comprises exposing an isolated or purified nucleic acid to a target cell under conditions that permit uptake of the isolated or purified nucleic acid into the target cell, wherein the isolated or purified nucleic acid comprises:
  - (A) retroviral nucleic sequences consisting of:
    - (1)  $\psi$  packaging sequences;
    - (2) cis-acting nucleic acid sequences for reverse transcription;
    - (3) cis-acting nucleic acid sequences for virus integration;
    - (4) optionally a cis-acting sequence RRE; and
    - (5) at least one cPPT sequence and at least one CTS sequence,wherein any other sequence of *pol*, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent;

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and,

(B) at least one heterologous nucleic acid sequence of interest,

wherein the nucleic acid induces import of the heterologous nucleic acid sequence of interest into the cell nucleus.

66. (NEW) The process as claimed in claim 65, wherein the efficiency of insertion of the nucleic acid of interest into the target cell nucleus is 30% or greater.

67. (NEW) The process as claimed in claim 65, wherein the nucleic acid of interest is in a vector.

68. (NEW) The process as claimed in claim 65, wherein the heterologous nucleic acid encodes a peptide, polypeptide, or protein.

69. (NEW) The process as claimed in claim 65, wherein the target cell is a non-dividing cell.

70. (NEW) The process as claimed in claim 65, wherein the target cell is a HeLa cell or a hematopoietic cell.

71. (NEW) A process for expressing a heterologous nucleic acid sequence of interest, *in vitro*, wherein the process comprises:

(A) exposing a target cell to an isolated or purified nucleic acid under conditions that permit uptake of the isolated or purified nucleic acid into the target cell to create a recombinant cell, wherein the isolated or purified nucleic acid comprises:

(1) retroviral nucleic sequences consisting of:

(a)  $\psi$  packaging sequences;

(b) cis-acting nucleic acid sequences for reverse transcription;

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(c) cis-acting nucleic sequences for virus integration;  
(d) optionally a cis-acting sequence RRE; and  
(e) at least one cPPT sequence and at least one CTS sequence, wherein any other sequence of *pol*, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent;

and

(2) at least one heterologous nucleic acid sequence of interest, wherein the nucleic acid induces import of the heterologous nucleic sequence of interest into a cell nucleus,

and

(B) culturing the recombinant cell under conditions that permit at least part of the nucleic acid to be transferred to the nucleus of the recombinant cell and the heterologous nucleic acid of interest to be expressed.

72. (NEW) The process as claimed in claim 71, wherein the nucleic acid is in a vector.

73. (NEW) The process as claimed in claim 71, wherein the gene of interest is expressed in tissue culture.

74. (NEW) The process as claimed in claim 71, which further comprises purifying or isolating the product of expression of the gene of interest.

75. (NEW) A nucleic acid comprising the *Cla* insert and *EcoRI/BamHI* insert of vector pTRIPΔU3EF1αGFP deposited at National Collection of Cultures of Microorganisms, Accession Number I-2328.

76. (NEW) An isolated or purified nucleic acid comprising:

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(A) retroviral nucleic acid sequences comprising:

1. ψ packaging sequences;
2. cis-acting nucleic sequences for reverse transcription;
3. cis-acting nucleic sequences for virus integration;
4. optionally a cis-acting sequence RRE; and
5. at least one cPPT sequence and at least one CTS sequence,  
wherein any other sequence of *pol*, other than the 178 bp fragment  
comprising the cPPT and CTS sequence, is absent;

and

(B) at least one heterologous nucleic acid sequence,  
wherein the nucleic acid sequence induces import of the heterologous nucleic sequence  
into a cell nucleus.

77. (NEW) A vector comprising the nucleic acid as claimed in claim 76.

78. (NEW) A process for inserting a heterologous nucleic acid sequence of  
interest into the nucleus of a target cell, *in vitro*, said method comprising exposing an  
isolated or purified nucleic acid to a target cell under conditions that permit uptake of  
said nucleic acid into the target cell, wherein said isolated or purified nucleic acid  
comprises:

(A) retroviral nucleic sequences comprising:

- (1) ψ packaging sequences;
- (2) cis-acting nucleic acid sequences for reverse transcription;
- (3) cis-acting nucleic sequences for virus integration;

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- (4) at least one cPPT sequence and at least one CTS sequence, wherein any other sequence of *pol*, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent; and
- (5) optionally a *cis*-acting sequence RRE;

and

- (B) at least one heterologous nucleic acid sequence;

wherein the nucleic acid sequence induces import of the heterologous nucleic sequence into a cell nucleus.

79. (NEW) A process for expressing a heterologous nucleic acid sequence of interest *in vitro* comprising:

- (A) exposing target cells to an isolated or purified nucleic acid under conditions that permit uptake of said nucleic acid into the target cell to create a recombinant cell, wherein said isolated or purified nucleic acid comprises:
  - (1) retroviral nucleic acid sequences comprising:
    - (a)  $\psi$  packaging sequences;
    - (b) *cis*-acting nucleic acid sequences for reverse transcription;
    - (c) *cis*-acting nucleic sequences for virus integration;
    - (d) at least one cPPT sequence and at least one CTS sequence, wherein any other sequence of *pol*, other than the 178 bp fragment comprising the cPPT and CTS sequence, is absent; and
    - (e) optionally a *cis*-acting sequence RRE;

and

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(2) at least one heterologous nucleic acid sequence of interest,  
wherein the nucleic acid sequence induces import of the heterologous nucleic  
acid sequence into a cell nucleus;  
and  
(B) culturing the recombinant cell under conditions that permit at least part of  
the nucleic acid to be transferred to the nucleus of the recombinant cell and the  
heterologous nucleic acid of interest to be expressed.

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